

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Final Office Action dated May 19, 2009 and the Advisory Action dated August 24, 2009 have been received and their contents carefully reviewed. Claims 1-3 and 6-10 are currently pending, of which claims 8-10 are withdrawn from consideration. Reexamination and reconsideration of the pending claims are respectfully requested.

The Office Action rejects claims 1-3, 6, and 7 under 35 U.S.C. §103(a) as being obvious over U.S. Patent Application Publication No. 2001/005891 to Ko et al. (*Ko*) in view of U.S. Patent No. 6,313,185 to Lau et al. (*Lau*). Applicants respectfully request withdrawal of the rejection of claims 1-3, 6, and 7.

To establish *prima facie* obviousness of a claimed invention, all the claim elements must be taught or suggested by the prior art. The combined teaching of *Ko* and *Lau* fails to teach or suggest all the elements of claims 1-3, 6, and 7, and thus, cannot render these claims obvious.

Claim 1 recites, “a thermally decomposable organic silane compound represented by the following Chemical Formula 1 ... $R^1_p R^{2_{3-p}} Si-L-Si R^{3_q} R^{4_{3-q}}$ [Chemical Formula 1] wherein... L is polyalkyleneoxide.” *Ko* fails to teach or suggest at least this feature of claim 1. *Ko* discloses that component (a) of a low dielectric resin composition can be organic bridge silane of Formula (2) $R^3_p Y^3_{3-p} Si-M-Si R^4_q Z^3_{3-q}$, wherein M is an alkylene or arylene group. *Ko*, ¶¶0026, 0029. The Office Action alleges that the group M reads on the group L of claim 1 and that “*Ko* teaches that the organic substance can be decomposed at 450°C or less and may be an alkylene or arylene.” *Office Action*, page 4. Applicants respectfully disagree. *Ko* did not disclose that component (a) or compound of Formula (2) will be decomposed at 450°C or less. In fact, *Ko*, in the Background section, discloses that “[f]ew organic polymers are stable at temperatures greater than 450°C.” *Ko*, ¶0009. More importantly, *Ko* discloses that component (b) of the low resin composition is a pore-forming component, and “[t]he organic part of this pore-forming component can be any organic aliphatic and/or aromatic hydrocarbon containing organic linkage groups that can be composed at 200~500°C.” *Ko*, ¶0036. Therefore, the Office Action improperly asserted that group M of formula from component (a) is a decomposable organic group. In fact, group M is the “bridge” of the organic bridge silane of Formula (2).

The Office Action then alleges that *Lau* cures the deficiency of *Ko*. Again, Applicants respectfully disagree. As discussed, *Ko* discloses “[t]he organic part of this pore-forming component can be any organic aliphatic and/or aromatic hydrocarbon containing organic linkage groups that can be composed at 200~500°C.” *Ko*, ¶0036. If one were to combine the teaching of *Ko* and *Lau* as suggested by the Office, one of ordinary skill in the art would have replaced the organic part of the pore-forming component (b) with polyalkyleneoxide. One of ordinary skill in the art would not have replaced group M in Formula (2) of component (a) with polyalkyleneoxide as suggested by the Office Action, because group M is the “bridge” of the organic bridge silane of Formula (2), and is not a decomposable organic group.

In addition, when determining whether a claim is obvious, an Examiner must make “a searching comparison of the claimed invention – including all its limitations—with the teaching of the prior art.” *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Furthermore, as the Supreme Court recently stated, “*there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.*” *KSR Int’l v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (emphasis added)). Here, the Office Action fails to provide articulated reasoning. The Office Action explains that the reasoning is that “*Lau* is utilizing the polyalkyleneoxide for the same purpose that *Ko* is utilizing the alkylene or arylene groups.” *Office Action*, page 4. Applicants respectfully disagree. *Lau* discloses nanoporous materials includes difluoroaromatic portions that carry a thermally labile portion. *Lau*, column 2, lines 53-56. *Lau* does not teach or suggest any possible use of the thermally labile groups in decomposable silane compound, silicate polymer or insulating film. As discussed above, the alkylene or arylene groups in *Ko* is the “bridge” of the organic bridge silane of Formula (2), not a thermally labile group. Thus, *Lau* is not utilizing the polyalkyleneoxide for the same purpose that *Ko* is utilizing the alkylene or arylene groups. The Office Action fails to provide articulated reasonings to support the conclusion of obviousness.

Furthermore, the methods of claims 1-3, 6, and 7 show unexpected results, and therefore, it would have not been obvious to one of ordinary skill in the art to combine teaching of *Ko* and *Lau* to arrive at the methods of claims 1-3, 6, and 7. *Lau* discloses that “[p]referred thermally labile groups include polypropyleneoxide, polylactides, polycarbonates, or polymethylmethacrylate.” *Lau*, column 6, lines 24-26. Inventor Min-Jin KO conducted

additional experiments and prepared Comparative Examples 3 and 4. Min-Jin KO Declaration, ¶4. Comparative Examples 3 and 4 were prepared by the same method described in Example 1 except that except that bismethyldimethoxy-silyhexyl polycarbonate diol and bismethyldimethoxysilylpropyl polycarbonate diol were used instead of bismethyldimethoxysilylpropyl polypropyleneoxide. *Id.* In other words, Example 1 includes polypropyleneoxide, and Comparative Examples 3 and 4 include polycarbonates. The results show that the insulating film of Example 1 shows good transparency and remarkably low dielectric constant compared to Comparative Examples 3 and 4. Min-Jin KO Declaration, ¶7. These unexpected results further establish that it would have not been obvious to one of ordinary skill in the art to combine teaching of *Ko* and *Lau* to arrive at the methods of claims 1-3, 6, and 7.

Accordingly, claim 1 is patentable over the combined teaching of *Ko* and *Lau*. Claims 2, 3, 6, and 7 variously depend from claim 1, and thus, are also patentable over *Ko* for at least the same reasons as claim 1. Applicants, therefore, respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 1-3, 6, and 7.

The application is in condition for allowance and early, favorable action is respectfully solicited. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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Respectfully submitted,

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Attachments